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## **Lighting: High Efficacy Lighting In Bathrooms**

### Description

This standards change will address problems associated with the existing high efficacy lighting requirement for residential baths. This requirement is one of the most unpopular requirements for builders because fluorescent lighting is perceived as being poor quality, especially vanity lighting in master bedrooms. Some of the issues and CEC interpretations are provided in the Spring 2000 *Blueprint*. Several options will be explored to make the requirement more understandable and more enforceable. The following language for §150 is one option for addressing the problem.

#### **§150**

*Each room containing a water closet, sink, tub, or shower shall have at least one luminaire that qualifies as high efficacy lighting. If there is more than one luminaire in the room, the high efficacy luminaire shall be switched at the entrance to the room.*

Other options may also be explored, including requiring that a percentage of permanently installed Watts qualify as high efficacy lighting.

### Benefits

Requiring high efficacy lighting in residential baths will reduce energy use, which reduces atmospheric emissions, among other environmental benefits.

### Environmental Impact

This measure has a positive environmental impact, although it will be necessary to address the issue of mercury in fluorescent lighting and the tradeoff with reduced energy use. Additional discussion is provided under kitchen and utility room lighting.

### Type of Change

This Standards change would be implemented as a mandatory measure, although some flexibility might be provided if the requirement is expressed as a power allowance.

### Measure Availability and Cost

High efficacy lighting equipment is available at a reasonable cost from multiple manufacturers. Lighting that provides good color rendering should be installed in residential baths, which will add some cost compared to the “bottom-of-the-line” products that are often installed.

### Useful Life, Persistence and Maintenance

See the discussion for kitchens and utility rooms.

### Performance Verification

No performance verification is required. As with all Standards requirements, plan checking and field inspection is needed for code enforcement.

### Cost Effectiveness

An approach to cost effectiveness similar to the one employed for kitchens and utility rooms will be used for residential baths. The hours of annual lighting use that is needed to justify the requirement will be calculated and compared typical lighting hours for residential baths.

### Analysis Tools

This requirement would be implemented as a mandatory measure and no analysis tools would be needed for compliance calculations. For life cycle cost analysis (cost effectiveness), annual lighting energy use will be calculated by multiplying the installed lighting power times the annual hours of lighting use. MICROPAS and/or CALRES may also be used to quantify cooling benefits.

### Relationship to Other Measures

This requirement uses the “high efficacy lighting” definition, and is related to the high efficacy lighting requirement for kitchens and utility rooms.

### Bibliography and Other Research

See the Standards change proposals for kitchens and utility rooms.